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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,002	01/15/2002	Mark Pavier	IR-1837	5495

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EXAMINER
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CHU, CHRIS C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 10/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/050,002

Applicant(s)

PAVIER, MARK

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 6 and 9 - 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6 and 9 - 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 17 July 2002 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment filed on July 17, 2002 has been received and entered in the case.

### ***Oath/Declaration***

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The photocopied declaration is illegible therefore a new clean declaration is needed.

### ***Drawings***

3. The proposed drawing correction filed on July 17, 2002 has been disapproved because it is not in the form of a pen-and-ink sketch showing changes in red ink or with the changes otherwise highlighted. See MPEP § 608.02(v).

4. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on July 17, 2002 have been disapproved because they introduce new matter into the drawings. 37 CFR 1.121(a)(6) states that no amendment may introduce new matter into the disclosure of an

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application. The original disclosure does not support the showing of structures of drains 30''' and 31''', gate electrodes 30'' and 31'', and source electrodes 30' and 31'.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first surfaces of the first and second die each contains a **power electrode** to be **connected to the pad section** and to **one another** as presented in claim 9 and the **second die** is coupled to selected electrodes of the **first die** as presented in claim 11 must be shown or the features canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Nakanishi et al. in view of Adachi et al.

Regarding claim 1, Nakanishi et al. discloses in Fig. 12 a semiconductor device package comprising:

- a lead frame (110) having a conductive pad section (101) with first and second opposite surfaces and a plurality of coplanar pin sections (105),
- a first (112) and at least a second (111) semiconductor die, each having first and second opposite surfaces at least one of said surfaces having a plurality of electrodes (114 and 113);
- said first surface (112b) of said first die (112) being fixed to and connected with said first surface of said pad section;
- said first surface (111b) of said second die (111) being fixed to and connected with said second surface of said pad section;
- an insulation housing (120) enclosing said die and said pad section;
- a conductive adhesive (171, top) for connecting said first surface of said first die to said first surface of said pad section;
- a second adhesive (171, bottom) for connecting said first surface of said second die to said second surface of said pad section; and
- wherein said pin sections (105) extend through the surface of said insulation housing to its exterior.

Nakanishi et al. does not disclose the second adhesive being electrically insulative. However, Adachi et al. teaches in column 6, lines 41 ~ 46 an electrically insulative material for an adhesive layer. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the electrically insulative material of Adachi et al. as the second adhesive layer in the device of Nakanishi et al. in order to provide a connection and fixed mounting of the first semiconductor chip as taught by Adachi et al. in column 4, lines 23 ~ 26.

Regarding claims 2 and 6, Nakanishi et al. discloses in Fig. 12 selected ones of the plurality of electrodes being connected to selected ones of the plurality of pins within the insulation housing.

Regarding claim 11, since Nakanishi et al. does not limit the first and second die to any particular or specific device, his/her disclosure encompasses all well known die's including "MOS gated power devices and a control IC." Further, Nakanishi et al. discloses in Fig. 12 the second die is coupled to selected electrodes of the first die.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Adachi et al. as applied to claims 1 and 2 above, and further in view of Kinzer.

Regarding claim 9, Nakanishi et al. does not disclose a MOS gated power device and a power electrode on the first surfaces of the die. Kinzer teaches in column 4, lines 29 ~ 34 the die being MOS gated power device; and wherein the first surfaces of the die containing a power electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to further use the MOS gated power devices and the power electrode of

Kinzer as the first and second die and the electrode in the device of Nakanishi et al. in order to increase thermal connection of the dice as taught by Kinzer in column 3, lines 29 ~ 34. Further, the phrase “ to be connected to the pad section and to one another” is an intended use language that does not differentiate the claimed apparatus from Nakanishi et al. and Kinzer.

Regarding claim 10, Nakanishi et al. discloses in Fig. 12 the first and second die are fixed to the pad section by a conductive adhesive (171).

### ***Response to Arguments***

10. Applicant's arguments filed on July 17, 2002 have been fully considered but they are not persuasive.

On page 4, applicant argues “[C]laim 1 now calls for, in combination with other limitations, a semiconductor device including a conductive pad and two die one of which is connected to surface of the pad by a conductive adhesive and the other connected to the opposing surface of the pad by an electrically insulative adhesive. The combination as set forth above is not suggested by Nakanishi et al., Adachi et al. or any other art of record.” The argument is not persuasive. The combined structure of Nakanishi et al. and Adachi et al. clearly disclose a semiconductor device (200 in Fig. 12 of Nakanishi et al.) including a conductive pad (101) and two die (111 and 112) one of which is connected to surface of the pad by a conductive adhesive (171, top) and the other connected to the opposing surface of the pad (171, bottom) by an electrically insulative adhesive (column 6, lines 41 ~ 46 of Adachi et al.)

For the above reason the rejection is maintained.

*Conclusion*

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.




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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu  
Examiner  
Art Unit 2815

c.c.  
October 9, 2002



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800